NATIONAL ENERGY RESEARCH SCIENTIFIC COMPUTING CENTER

Finding Hidden Oil / Gas Reserves

***Objective*: Apply new, highly rigorous, massively parallel, 3-D imaging techniques to create geophysical maps of hydrocarbon reservoirs in unprecedented levels of detail.**

***Implications*: New detection abilities and exploration savings by revealing where hydrocarbon deposits reside, even when covered by ocean over a mile deep and several more miles of rock below the ocean. Can also be used for locating potential sites for CO_2 sequestration.**

***Accomplishments:* Has already provided insight into complex geology of Campos Basin, a petroleum rich area near Brazil.**

***NERSC:* Code developed on Franklin.**

- **Algorithms can run on O(10,000) cores; designed to scale well beyond. Runs on Franklin routinely use 4,000-8,000 cores.**

G. Newman, M. Commer (LBNL)

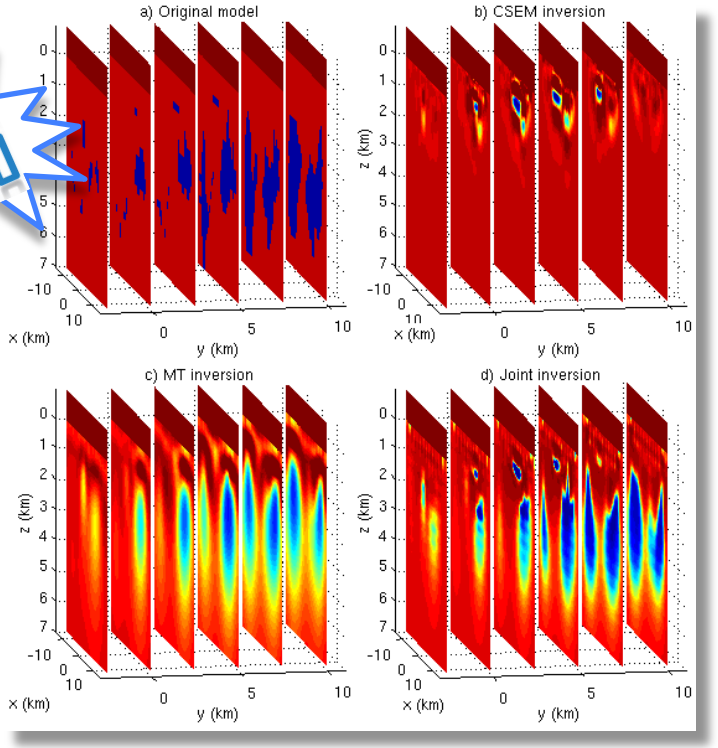

Image improvement resulting from the method. Original data (a), controlled-source electromagnetic method (CSEM) alone (b), magnetotellurics (MT) alone (c) and combined CSEM and MT (d).

http://escholarship.org/uc/item/0qh3p22m

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